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Mediation effect of financial attitude on financial knowledge and financial behavior: The case of university students

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A R T I C L E I N F O

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A B S T R A C T

In this study, we aim to look into the relation among different aspects of an individual's attribute with financial issues, namely financial knowledge, attitude and behavior and to examine whether the relationship between financial knowledge and financial behavior is strengthened with financial attitude. To this end, 396 university students in Turkey are surveyed online regarding their attitudes towards financial issues, their level of financial knowledge, and their financial behavior. We use Factor Analysis, Cronbach's Alpha, and Structural Equation Modeling (SEM) to analyze the relationship between financial knowledge of the survey participants with their financial attitude and behavior as well as the mediation effect of financial attitude in this relationship. We find that financial attitude acts as a mediator in the financial knowledge and financial behavior relationship and financial attitude's intervention reinforces this relationship.

Introduction

Financial literacy is a widely discussed and studied topic in both the academic world and financial sector. Noctor et al. (1992) defined financial literacy as the competence of making informed judgements and taking decisions in order to effectively use and manage money. The global financial crisis of 2008, increasing indebtedness, and complexity of financial products and services require individuals' level of financial literacy to be adequate enough to take effective decisions on financial matters. Sound financial decision-making can also be attributed to one of Sustainable Development Goals set by United Nations to be achieved by 2030 in economic, social, and environmental issues (United Nations, 2015), Financial Inclusion. Gaining financial literacy through education and getting included in the financial system can be an important tool in promoting sustainable economic growth.

The three essential parts of financial literacy are financial knowledge, financial literacy, and financial behavior. Understanding the relationship between these parts are going to shed light on the ways of improving the economic well-being of a country starting with the individuals. At the firm level, financial literacy became an effective factor in the performance of small and medium-sized enterprises (SME) (Drexler et al., 2010; Eniola and Entebang, 2016). Furthermore, an increase in the financial literacy of individuals will increase the financial inclusion which also depends on the financial infrastructure of countries (Gretta, 2017; Grohmann, 2018). One of the main drivers of the well-being of a country is based on the preferable financial behaviors of individuals. The expected financial behaviors are highly associated with financial knowledge. Hence, college education becomes a critical platform to shape the financial attitude and behavior by educating young adults in financial topics. Danes (1994) expresses that higher future earnings and higher saving rates are correlated with the financial knowledge of university students. Otherwise, probability to face financial difficulties after graduation increases due to the lack of financial knowledge. (Hira, 2002). Since it is important for university students to graduate as financially literate, examining the effect of financial literacy on the financial attitude and behavior of university students is very crucial. Hayhoe et al. (2000) study the relationship between effective attitude and credit card usage in university students and

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reach a conclusion that students with a positive attitude towards credit cards are more likely to make a purchase with credit cards if compared to students who have a lower positive attitude. In another study, Fox et al. (2005) show that if individuals take a form of a financial education even if it's a short seminar, financial attitude and knowledge are positively affected on the usage of credit cards. Moreover, there is a mutual relationship between financial literacy and education. Pesando (2018) analyzes the Programme for International Student Assessment (PISA) scores of Italy and finds out that students with higher financial literacy levels have a higher understanding of the importance of schooling. Farinella et al. (2017) study the relationship between financial literacy levels of high school students, social equality and higher income in which they find a correlation. The stated arguments underlined in the motivation of this study are understanding the relationship between different components of financial literacy and urging individuals, universities and, policymakers to take necessary actions.

According to the report of Klapper et al. (2015) which is based on Standart and Poor's Financial Literacy Survey, 24% of adults in Turkey are financially literate. This result highlights the need for financial education in Turkey which will improve the relationship between financial knowledge, financial literacy, and financial attitude. In this study, we examine this relationship by conducting a survey based on OECD/INFE Financial Literacy Survey (2018) with 396 university students in Turkey and analyzing the survey data using factor analysis, Cronbach's Alpha, and Structural Equation Modeling (SEM). Next, related literature is reviewed. The literature review is followed by research and methodology section. Then, the results and discussion section is given and we finalize our paper with the conclusion.

Literature Review

There are theoretical studies which clarify the decision-making process of individuals in financial matters and how financial behaviors are shaped. Deacon and Firebaugh (1981) developed a family resource management model consisting of four stages which are inputs, throughputs, outputs and feedback loop. They argue that the environment in the household is effective on the university students' financial attitudes towards money. Furthermore, Liebermann and Flint-Goor (1996) argue that individuals' financial decisions like borrowing is related with understanding the operations of financial markets. Both of these studies are presenting a theoretical background to the relationship between financial knowledge and financial attitude with financial behavior. Next section provides several empirical studies that help better understanding this relationship.

Empirical Studies and Hypothesis Development

Being financially literate is an important quality for university students. Especially after the 2008 crisis which is mainly a result of poor financial decision-making, it became important for university students to be ready, before entering the business life in which many responsibilities are awaiting (Lusardi, 2011). This makes it vital for young adults to be knowledgeable about issues like budgeting, savings and debt.

The Organisation for Economic Co-operation and Development's (OECD, 2012) definition of financial literacy is a combination of the consciousness, knowledge, ability, attitude and behavior which are essential tools to make financial decisions that will add up to financial wealth. Several studies point out the fact that low level of financial literacy may lead to uninformed and inappropriate decisions. Danes and Hira (1987) study the college student's knowledge level in five main money management areas. These include credit cards, insurance, record keeping, personal loans and overall financial management. They discuss that although students have a basic general understanding of financial issues, they lack information regarding specific topics. Chen and Volpe (1998) survey 924 university students to assess their knowledge on personal financial topics and they argued that a low level of financial literacy would lead to uninformed decisions in the future. Moreover, Furtuna (2007) examines the financial literacy of university students and argues that financial illiteracy may cause lower productivity and a burden on the countries' economy since the personal issues are going to have a bigger impact once students enter the labour market. Financial literacy is also effective in how individuals behave financially. Xiao et al. (2014) study the relationship between financial behaviors of university students before and after their 4-year education. They find that being more knowledgeable reduces risky payment behavior, which underlines the importance of financial literacy. Additionally, it is expected to observe more aware students due to education. Lührman et al. (2015) argued financial education programs are good ways to develop an interest in financial concepts which will lead a desired financial behavior.

University students should be aware that a low level of financial knowledge prevents them from being efficient in financial matters, and thus they have to focus on improving their level of financial literacy. Radecki and Jackard (1995) say that when students' perceived knowledge is higher than their actual knowledge, they show lower inclination to search for information. Furthermore, university students are more likely to feel pressure when they are lacking to show positive financial behavior and having inefficient financial knowledge as Britt et al. (2017) argue. Tang and Baker (2016) state that financial knowledge is not enough by itself to drive a desired financial behavior, self-esteem is also associated with the financial behavior. The influence of parents and peer groups is found to be effective on the financial behavior of young adults. Expectations of parents and peer groups' financial behaviors are argued to be determinants of financial behaviors of young adults (Watson and Barber, 2017). Dwiastanti (2017) argues that one's financial attitude is a determinant of how a person shape his/her behavior

One of the first things that the majority of university students in United States are facing is college debt. Javine (2013) argues that student's duration in school have a positive relationship with the debt level and students with lower grade point averages are more likely to have a higher level of student loan. Then, it is vital to consider the determinants of financial literacy among university students. There are several factors like parents, age, gender, income that are effective on the financial literacy of university students (Jorgensen and Tavla, 2010; Thapa, 2015). Rasoaisi and Kalebe (2015) analyze the determinants among the university students and find that major of a student affects the level of financial literacy. This implies that the level of financial literacy will differ between students who are studying a business major and engineering major. The attitude towards money is also another determinant. A specific attitude towards money will have an impact on the degree of concentration that you put on finance issues. Albeerdy and Gharleghi (2015) study the determinant of financial literacy among university students in Malaysia and state that having a positive attitude towards money will increase the student's financial understanding as compared to having a negative attitude. Furthermore, Burgess (2005) argues security concerns leads a search for information seeking related to financial issues.

The literature also discusses the impact of financial education on students. Mandell and Klein (2009) examine the university students' financial literacy and financial behavior based on financial education they get both in high school and college. Their study shows that financial courses in high school or college have no effect on the level of financial literacy, however, financial behavior of students shows improvement. On the other hand, Peng et al. (2007) also study the impact of personal finance education given in high school and college based on investment knowledge and household saving rates. While college-level personal finance courses have a positive impact regarding investment knowledge, there is no significant relationship between investment knowledge and high school level courses. Furthermore, Ibrahim and Alqaydi (2013) survey 412 residents in the United Arab Emirates and argue that financial education can be a tool to improve the financial attitude which is going to decrease the level of dependency on credit cards. Susilowati and Latifah (2017) also support the view which emphasizes that the higher level of education will improve financial behavior. This improvement makes university students more confident on their investment decisions. On the issue of how to deliver an adequate education, White et al. (2019) state that financial education should be based on an experimental learning.

There are studies that focus on the effect of financial attitude, one's view of financial manners, on financial knowledge and behavior. Ameliawati and Setiyani (2018) survey a sample of 278 university students and argue that financial attitude is positively related to both financial knowledge and financial behavior. Zachary Finney and Finney (2018) examine the effect of financial literacy on the attitude of university students towards student loan providers which are found to be significant. They also argue that financial optimism towards future expectations derives a positive attitude towards loan providers.

As the literature states, there is an association between financial knowledge, behavior and attitude. In this study, we aim to explore this relationship between financial knowledge of the survey participants with their financial attitude and behavior as well as the mediation effect of financial attitude. The model that best describes our motivation in this study is adapted from Deacon and Firebaugh's (1981) family resource management model which illustrates the relation between knowledge, attitude, and behavior as shown in Figure 1.

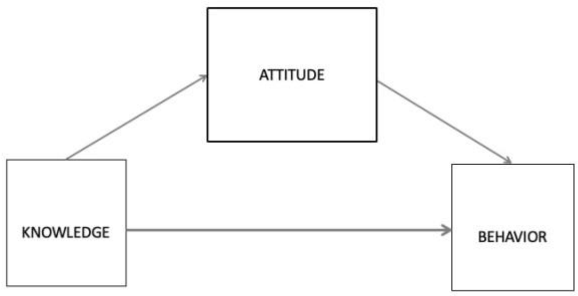

Fig. 1: Research Model

Research and Methodology

First a questionnaire using questions from OECD/INFE Financial Literacy Survey (2018) is conducted in this research. Then using the responses of the survey participants, we examine the mediation effect of financial attitude on financial knowledge and behavior using structural equation modeling (SEM).

The survey is carried out with 396 university students studying in public and foundation universities located in Istanbul. The financial literacy scale published by OECD/INFE (2018) is used. In order to calculate the financial knowledge score as the measuring tool, the participants are asked 7 finance and math questions. If the participants answer the question correctly, the score they get is "1", whereas the wrong answer is evaluated with a score "0". To test the measurement model, confirmatory factor analysis is performed and the reliability and validity of the measurement model are tested. Then, the proposed model is tested using SEM and the mediation effect. Chi-square / sd ratio, CFI, GFI, AGFI, NFI, RMSEA and RMR indices are used to determine the structural validity of the structural equation model. Frequencies and percentages are used to evaluate demographic variables. In the analysis of the data, SPSS package program is used for descriptive statistics and LISREL program is used for SEM.

Result and Discussion

Descriptive Analysis

37.6% of the students (n = 149) are male and 247 students are female. 57.8% of the students (n = 229) study at a state university, while the rest are from a foundation university. 13.4% of the students (n = 53) is studying at the preparatory class, while 18.7% of them (n = 74) are freshmen. 32.1% of survey participants (n = 127) arein their sophomore class, while 19.4% of them (n = 77) are junior and 16.4% of them (n = 65) are senior students.

Factor Analysis

The detailed results for EFA, and SEM are given in Table 1 and Figure 2.

Table 1: EFA results and Cronbach's α values for the factors financial behavior and financial attitudes

Factors/Items		Factor Loading	Eigen value	Explained Variance (%)	Cronbach's Alpha
Financial Behavior					
I tend to worry about paying my normal living expenses		.757	9,147	29,508	0,881
My finances control my life		.624			
Before I buy something I carefully consider whether I can afford it		.597			
I have money left over at the end of the month		.517			
I pay my bills on time		.512			
I tend to ignore the small print unless something goes wrong		.574			
I prefer to use financial companies that have a strong ethical stance		.631			
Because of my money situation, I feel like I will never have the things I want in life		.623			
I am honest even if it puts me at a financial disadvantage		.624			
I think it is more important for investors to choose companies that are making a profit than to choose companies that are minimising their impact on the environment		.594			
I am happy to discuss my financial situation with people I know well		.570			
I trust financial service providers to treat me fairly		.606			
If a shop keeper gave me too much change, I would probably keep it		.632			
I am concerned that my money won't last		.637			
I am just getting by financially		.630			
I tend to live for today and let tomorrow take care of itself		.506			
I sometimes buy a lottery ticket when I feel like I don't have enough money		.538			
I am currently repaying a foreign currency loan		.500			
Financial Attitude			3,286	40,108	0,899
I find it more satisfying to spend money than to save it for the long term		.595			
I am prepared to risk some of my own money when saving or making an investment		.554			
Money is there to be spent		.715			
I am satisfied with my present financial situation		.549			
I keep a close personal watch on my financial affairs		.723			
I use my mobile phone to make or receive payments		.707			
My financial situation limits my ability to do the things that are important to me		.697			
I set long term financial goals and strive to achieve them		.683			
I believe that money in a bank will be safe even if the bank fails		.519			
I have too much debt right now		.474			
If I borrow money I have a responsibility to pay it back		.692			
I believe that banks should check the ethics of companies before providing them with banking services		.658			
I believe that it is a good time for people to invest in crypto-assets or ICOs		.529			
Test statistics	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,928			0,916
	Bartlett's Test of Sphericity	X_2=4898,899 (p=0,000)			

As it can be seen from Table 1, according to the results of explanatory factor analysis, the items of the scale formed two factors which we rename them as Financial Attitude and Financial Behavior. This result states that the survey questions are explaining two constructs as defined in OECD/INFE Financial Literacy Survey (2018). The eigenvalues variance explanation ratios of factors and the factor loadings of each item is also given in Table 1. The total variance explanation ratio of these two factors is calculated as 40,108. We continue the analysis using these two factors for financial attitude and behavior scores of the survey participants.

Within the Financial Attitude factor: the statement "I keep a close personal watch on my financial affairs" has the greatest loading which is 0.723. The statement "I tend to worry about paying my normal living expenses" is found to be the most effective item with the loading of 0.757 in the Financial Behavior factor.

SEM Analysis

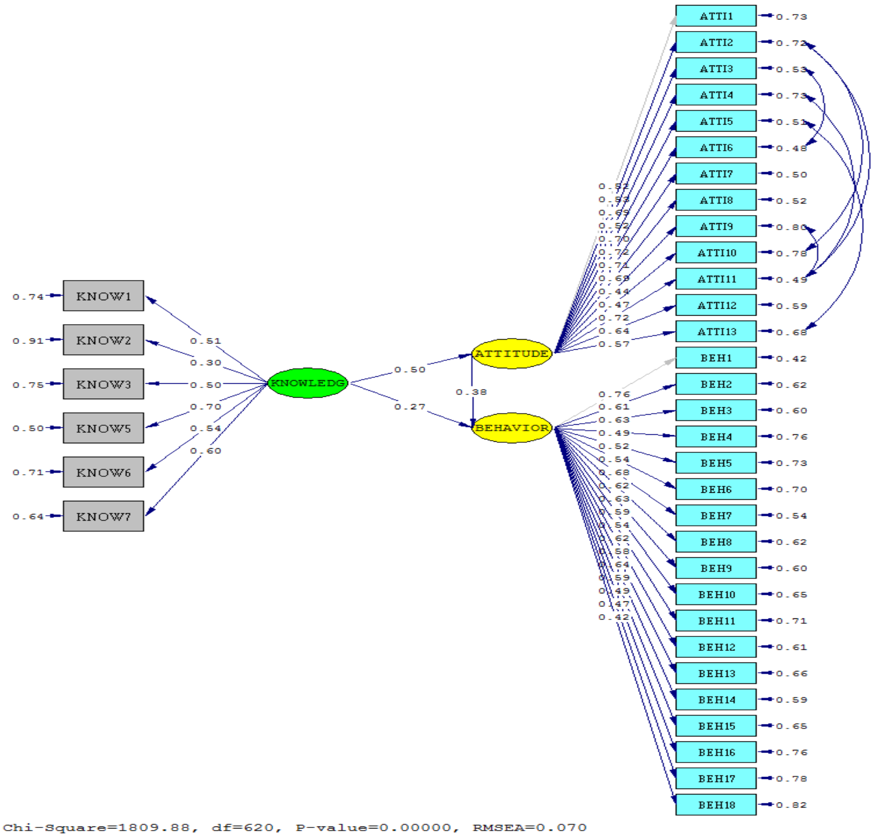

Fig.2: Structural Model Among Attitude, Behavior and Knowledge

Goodness of fit statistics and the limits for the structural model given in Figure 2 is given in Table 2.

Table 2. Limits and the results of the structural model.

Fitness Criterion	Perfect Fitness	Acceptable Fitness	Model
RMSEA	0 ≤ RMSEA ≤ 0.05	0.05 < RMSEA ≤ 0.10	0.070
NFI	0.95 ≤ NFI ≤ 1	0.90 < NFI < 0.95	0.92
NNFI	0.97 ≤ NNFI ≤ 1	0.95 ≤ NNFI < 0.97	0.95
CFI	0.97 ≤ CFI ≤ 1	0.95 ≤ CFI < 0.97	0.95
SRMR	0 ≤ SRMR < 0.05	0.05 ≤ SRMR < 0.10	0.065
GFI	0.95 ≤ GFI ≤ 1	0.90 ≤GFI < 0.95	0.90
AGFI	0.90 ≤ AGFI ≤ 1	0.85 ≤ AGFI < 0.90	0.87

(RMSEA: Root Mean Square Error of Approximation, NFI: Normed Fit Index, NNFI: Non-Normed Fit Index, CFI: Comparative Fit Index, SRMR: Standardized Root Mean Square Residual, GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index)
Source: Schermelleh-Engel & Moosbrugger (2003);

Table 2 shows the Limits and the results of the structural model given in Figure 2. Table 2 indicates that the model given in Figure 2 is statistically significant and shows a good fitness according to all goodness of fit statistics. Beside these Fitness Criterions if the value of {chi-square / df} is less than 3 it means that there is an acceptable fit (Kline, 2005). For this model chi-square / df is obtained as 1809.88/620 = 2,917 that means the model is statistically significant.

When we examine the most important variable in Financial Attitude factor, the statements, "I believe that banks should check the ethics of companies before providing them with banking services" and “My financial situation limits my ability to do the things that are important to me”, are found with a coefficient of 0.72. When we consider Financial Behavior factor, the most important statement is "I tend to worry about paying my normal living expenses" with a coefficient of 0.76. The statement with the highest number of correct answers in the financial knowledge score is "If someone offers you the opportunity to earn alot of money, then there is also the possibility of losing alot of money." with a coefficient of 0.70.

The figure indicates that there is a positive relationship between Knowledge and Attitude with a coefficient of 0,50. The relation between Knowledge and Behavior also positive with the coefficient of 0.27. Mediation effect of financial attitude relation between behavior and knowledge also positive with the coefficient of 0.38.

Conclusions

The increasing complexity of financial products and services, unstable financial markets, higher use of debt, and the reality of retirement are several issues that we as individuals are going to face sooner or later (Mishra and Kumar, 2019; Aydin and Akben Selcuk, 2019; Hastings and Mitchell, 2020). These factors require young adults to themselves with financial skills. Lusardi (2019) expresses three reasons why financial education should be given in schools. These are are the need for exposure to key financial concepts, easiness to access financial education in schools for individuals that do not have access otherwise, and the cost of receiving financial education. For these reasons, college education became a valuable platform for getting a satisfactory financial education.

This study examines the mediation effect of financial attitude on financial knowledge and financial behavior of university students in Turkey. Using an online survey conducted on 396 university students, the results indicate that there is a positive correlation between all these three issues examined using SEM analysis. The financial knowledge level of the university students positively affects financial attitude and financial behavior while the relationship is lower for the latter. But when we take the financial attitude of the survey participants as a mediator, the relation between the knowledge and behavior is getting stronger according to the SEM analysis.

There are several implications arising from our study. First, universities are valuable platforms to give financial education to the young adults before entering into the labour force where they are going to be exposed to everyday financial decisions like payments to long-term decisions like investments. That it is why it is important to integrate college courses into the curriculum in order to achieve sustainable financial behavior. But along with a curriculum integrated with financial literacy courses, the attitude of the individuals is important in shaping the financial behavior. Maintaining a sustainable financial behavior can only be achieved not just by teaching financial matters to students but by finding better educational mechanisms to reflect the financial knowledge they acquire on their financial attitude. This way, the chance of getting a better financial behavior for enhancing the well-being of the individual is increased.

Furthermore, institutions that provide financial services to individuals should analyze their customer segments and identify the different groups based on their financial literacy level. This will help to develop better communication tools and increase customers’ involvement.

Policymakers have a responsibility to increase the financial inclusion of its citizens. Necessary regulations should be introduced to increase the involvement of individuals. Tools like seminars and public service ads can be also used to reach more people. Since the United Nations sets financial inclusion as a required target to achieve the Sustainable Development Goals, the access to financial instruments is an important step to attain a sustainable economic development.

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